

IN THE MATTER OF the Resource Management Act 1991
AND
IN THE MATTER OF a Proposed Regional Plan Change
 (PC1 – Waikato and Waipa River
 Catchments) to the operative
 Waikato Regional Plan 2007.

**MEMORANDUM FROM FACILITATORS TO WAIKATO REGIONAL COUNCIL'S PC1
HEARING PANEL:EXPERT CONFERENCING**

1. As directed, on 21 and 22 November 2018 an independently facilitated Information Forum was held in Hamilton at which, among other things, parties considered the question as to what issues in the water quality science and economic modelling-related area would benefit from expert caucusing.
2. A series of topics and sub-topics were identified and a schedule of agreed topics is attached to this Memorandum.
3. Due to the unavailability of a significant number of experts on the 10th and 11th December 2018 (the originally scheduled days) those conferencing dates are vacated. Instead two further, though not contiguous, days have been identified for the next expert conferencing round- being Wednesday 19 December and Friday 21 December 2018. That conferencing, if required, would again take place at the Distinction Hamilton Conference Centre, Garnett Road, Te Rapa.
4. A further two days have been set aside to complete the round as required on Wednesday 30 and Thursday 31 January 2019.
5. Having reflected on the 2-day Forum, the topics identified by the parties, the time available prior to the scheduled commencement of the hearing in March 2019, the expected release date for the s42A report, and the dates for evidence exchange, we bring the following to the Hearing Panel's attention for consideration.
6. It seems to us that the underlying issues discussed at the Forum are of such fundamental significance that it is unlikely in the available time (and at this time of year) that useful progress would be made. We are also mindful that the cost of experts' time for conferencing is not inconsiderable.
7. As the issues (in this area) are now more clearly identified we have formed the view that it would be more efficient for the Hearing Panel to convene the hearing on the preliminary matters before determining whether and to what extent further detailed conferencing is warranted.
8. We recommend accordingly.
9. We seek the Panel's urgent direction on this matter since parties have not yet been advised about the cancellation of the 10/11 December conferencing dates and also anticipate a requirement for expert "will say" statements on or about 7 December 2018. It is in all parties' interest that this matter be determined and conveyed as soon as practicable.

David Hill & Stuart Shepherd
Facilitators - PC1 – Economic Modelling and Water Quality Science

26 November 2018

Facilitators David Hill
Stuart Shepherd

Presenter Panel Bryce Cooper
Sandy Elliott
Graeme Doole

Submitters representatives: 42 People
WRC Observer: 2
S42A observer: 1

Summary tabulation of Issues raised during Forum 1, Day 2.

Mainly Economic	
E1	Product pricing over time
E2	Cost and benefits <ul style="list-style-type: none"> • Sensitivity of results to variations in Marginal Abatement Costs (MAC) • Validity & currency of MAC estimates. • Possible inclusion of transaction and indirect costs and their effect on results. • Possible inclusion of Marginal Abatement Benefit (MAB) estimates in model • Derivation of annualised costs in model
E3	Appropriate role of property values (if any) in model
E4	Distinction between existing and proposed environmental regulatory obligations, that is ensuring the modelling focuses on the proposed change in obligations under PC1 <ul style="list-style-type: none"> • And include the regulatory obligations embedded in modelling tools, e.g. Overseer.
E5	Definition of Terms e.g.: Marginal Cost, Average Costs, Total Costs, . Economic surplus or other measures of economic benefit, .etc
E6	Identify likely direction & magnitude of difference in results that would arise from using general equilibrium modelling versus the input / output modelling method used (noting that no submitter has, or has indicated they will be providing a general equilibrium model).
E7	Identify likely errors, variances or degrees of confidence of inputs, outputs and assumptions of modelling; <ul style="list-style-type: none"> • Initial step is to identify the data or assumptions that experts wish to assess. • This assessment should also be applied to alternative modelling frameworks.
E8	Assessment of alternative modelling frameworks to WRC. <ol style="list-style-type: none"> 1. For a specified area (e.g. from Wairakei Pastoral) 2. For the whole catchment (e.g. from Beef & Lamb)
E9	Clarify the version of OVERSEER, and the assumptions, coefficients & protocols relied on in the model: <ul style="list-style-type: none"> • Undertake sensitivity analysis from changing specified assumptions,

	protocols or coefficients to those used in OVERSEER.
E10	Investigate choice of mitigation measures applied across sub-catchments; <ul style="list-style-type: none"> • Including related use of standards across sub-catchments, e.g. std. freq. distributions
E11	Identify impact on results from varying up-take rates of mitigation measures
E12	Assess alternative modelling frameworks to that of the WRC
E13	Estimate impact of changes on different parties.
Mainly Science	
S1	Investigate water quality variables & their measurement & location choices used for current state & future states as used in Table 3.11-1 (need to clarify the forum for discussion of these water quality variables)
S2	Load to come (nitrogen) <ul style="list-style-type: none"> • Definitions • To what extent does old groundwater have elevated nitrogen concentrations? • What conceptual model has been used for groundwater / nitrate movement, shallow & deep? • How much weight has been placed on the Close report and how has it been used to inform modelling?
S3	Assess model sensitivity of chlorophyll (and ecosystem health, macro invertebrates and fish health) to nitrogen, phosphorous, sediment & other factors. <ul style="list-style-type: none"> • Include assumptions related to above • Include seasonality & annual averaging.
S4	What metrics have been used or assumed in the modelling to support human health and how have these metrics been measured?
S5	Clarify attenuation functions used in the model & how they were verified? <ul style="list-style-type: none"> • How they influence the choice of various land uses? • How they influence land use flexibility? • Identify un-attenuated & attenuated loads used at sub-catchment & stream level • Undertake sensitivity analysis of specified shifts in attenuation functions.
S6	Assess efficacy of mitigation measures: <ul style="list-style-type: none"> • Include specified alternatives • Include seasonal & event based assessments.
S7	Nitrogen Reference Point (NRP) <ul style="list-style-type: none"> • How would compliance be conducted under PC1 (given proposed way to set base)? • Assess effectiveness of using NRP to achieve desired changes in water quality, e.g. incl. sensitivity analysis. • Assess nitrogen vulnerability mapping. • Identify impact of “75th percentile intervention” versus other possible mitigation measures.

S8	<p>Boundaries of sub-catchments</p> <ul style="list-style-type: none"> • Assess consistency with digital elevation models
S9	<p>Climate change issues</p> <ul style="list-style-type: none"> • Consider if these issues should be included in the model and if so how.
S10	<p>Assess the appropriateness of using 2012 land use data</p>
S11	<p>OVERSEER point (see also E9)</p> <ul style="list-style-type: none"> • Examine impact on model results of using std version and data entry protocols in OVERSEER across land uses.
S12	<p>Explore developing criteria for choosing alternative sub-catchment models</p> <ul style="list-style-type: none"> • Include application to shallow lake catchments